1 November 1982

ODP PLAN

Support Capabilities

I. Executive Summary

Historically, ADP has been employed within CIA in two ways:

- Computational problems associated with scientific applications.
- Well structured tasks involving high transaction volumes.

In more recent times, data processing has been applied in new and different ways. The emergence of on-line processing and storage devices of high capacity has fueled an explosion in the requirement for access to data. Data processing has now moved into the office. The outward manifestation of this movement has been the appearance, in large numbers, of terminals almost everywhere you look.

The late 1980's will see an Agency analytical environment in which ADP services will be central to all productive activities. Document preparation will be accomplished by using both data and word processing technologies; printing and publishing and the coordination of document drafts will be done over networks that interconnect all user terminals with each other and directly to the major printing systems of the Agency. A terminal will sit on the desk or at the work station of virtually every analyst. The integration of word and data processing with networking will make it possible for the analyst to accomplish all major activities associated with the production of intelligence from a single terminal. The entire process will be dependent upon systems that are responsive to the user and absolutely reliable. This presents an extraordinary challenge to ODP in terms of being able to guarantee that major services are never interrupted.

More fundamentally, however, the coalescence of these three technologies (data processing, word processing, and networking) will present the opportunity for dramatically improving the productivity of virtually everyone. Electronic mail systems will move correspondence throughout the Agency in seconds rather than

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days. The ever-decreasing cost of storing data magnetically will drive us away from paper files and into electronic filing cabinets.

This analytical environment then becomes a given into which new computer applications must be delivered. Whether it be SAFE or new information management systems for the Intelligence Community, e.g., CAMS3 for the post 1985 collection systems, the implications for ODP are clear. All ODP endeavors involve the development of systems that must be capable of being used in the office right from the desk of the analyst.

II. Overview

A. The concerns which have been at the center of ODP resource strategy for the past several years are enumerated under the several catagories of service below. Basically these concerns have been centered around the provision for a central facility, which is easily expandable to support the Agency user community in all aspects of DP support.

VM Services

The demand for online services has been the fastest growing and most visible of the ODP services. In 1976 approximately 100 users could be supported concurrently. In 1982 a portion of the workload for VM was off-loaded onto a second CPU. In addition a newer, more reliable and larger, CPU was added for this workload and presently ODP is approaching the point where 500 users can be supported concurrently. The following table shows the magnitude of the effort required to support an expanding and more sophisticated user population.

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Reliability and Availability

As more and more users become dependent upon ADP in the performance of everyday tasks another major concern has been availability and reliability. ODP has taken many steps to improve upon this aspect of its service. The primary factor in this improvement has been in the hardware capability; previously it was expected that we would have one or two hardware failures per month, now ODP is approaching the point where one or two might be expected per year. The primary concern now is software related failures and ways to reduce these.

Project SAFE

Project SAFE (Support for the Analysts' File Environment) plans are designed to manage access to intelligence documents and open-source information received by CIA in electrical form.

Electrical documents, arriving at the rate of approximately 3500 messages per day, will be stored in computer files within the SAFE system. The original development effort experienced difficulties resulting in a redirection of the project in the summer of 1982. This new direction emphasizes a lower risk integration approach and features compatibility with currently installed computer resources and the use of commercially available software. In 1983, a separate computer center will be provided to support a CIA and DIA early SAFE capability based on the currently operational Pilot Mail Operation (PMO) and the AIM electronic mail system. Specific objectives are set forth in Part 2 of this plan, ADP Equipment/Services 1982-1992.

CAMS 1

The development of CAMS1 has been of the highest priority to ODP. Changes in this project have now been limited to operational requirements while implementation of CAMS 2 P/S begins.

B. Current ODP concerns, in addition to the above, are listed below.

Office Automation

This new service category, Office Automation Service, groups such support elements as terminals, printers, graphics display, word processors, and related software, which were treated separately in previous ODP plans. ODP considers this service an extension of support offered by the central computing facility and as part of the overall effort to maximize electronic data-processing assistance to end-users. In so doing, ODP has sought to select a

limited product line, thus offering economies of scale and, at the same time, maximum service to a disparate user community. As perceived by ODP managers, the product line should offer:

- Capability to cluster terminals
- Inexpensive devices for simple tasks
- Compatibility with the industry standard (known as the IBM 3270)
- High-speed communications
- Reliable color-graphics terminals
- TEMPEST-tested, medium-speed, high-quality printers

ODP continues in its efforts to fulfill these product-line requirements, which continue to be on ODP's procurement agenda. ODP is committed to have hardware and software tools designed to assist analysts in improving the intelligence end-product and increasing the speed with which it reaches the customer. Another aspect of this service is a requirement to train analysts to fully utilize advanced, more sophisticated systems, which include small, remotely located devices which will be easy to use.

Corporate Management Systems

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Estimated Increase in GIMS Use
(FY82 Through FY92)

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In order to meet the support requirements envisioned in Phase IV planning papers ODP will develop the Management Assistance Program (MAP3) which will provide the DDA with a truly interoperable capability. Current cost estimates are in the area of 25X1

Emergency Planning

As computers become more a way of life and work for analyst the need for a backup capability becomes even more critical. A detailed discussion of this concern is contained in part 2 of this plan, ADP Equipment and Services 1982-1992.

Security

Of equal concern is the protection of the data on the network in both benign and hostile environments. ODP will work closely with the Offices of Security and Communication to assure that all necessary security procedures are defined and adhered to.

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These three classes of service, batch, on-line and DBMS, continue to be the primary components of the support offered by the central service. While ODP has developed a few mini-computer systems and indeed even selected a standard mini-computer, the need for accessing and sharing large data base holdings continues to fuel increasing requirements for increased capacity for each of the three major services. There is no reason to believe that demand for the central utility will abate in the foreseeable future. Office automation, local area networks, and personal computers will bring new capabilities and new methods of doing business to the users, but the new capabilities will also serve to recruit new users to the existing customer base. And, even more than in the past, it is expected that an increasingly sophisticated user population will find new opportunities for exploiting the new tools and thus further escalate demand for central service. (We have already had a request to interface a device in the personal computer class to the interactive system.) ODP planning will be directed toward insuring the availability of the central utility in the face of those demands. In line with this strategy the following items will be of primary importance in meeting increases in the demand for computer support.

- Increasing SAFE capacity to accommodate the expected increases in the number of DI analysts.
- Upgrading all services in line with growth patterns projected in the Phase III planning papers.
- Greater use of contractor support to achieve these stated objectives. Staff personnel will not be available in sufficient numbers to address user requirements.
- Development of the Information Center concept to aid the user community in the use of available ADP resources. ODP must help the user to help themselves. The user must learn to handle the less demanding programming requirements while the ODP professional is tasked with complex technical requirements.

Potential Problem Areas

The potential problem areas associated with these future directions are not new and would have existed without the expansion envisioned in the Phase IV planning papers. The problems will only be accelerated by the increases in people at diverse locations. It cannot be said that any one of these problems is more significant than another but in total they represent a quantum increase in the requirements for logistical support. The problem areas include:

- Adequate space for computers and people (staff and contractor). This has been a primary concern for many years. At present there is a serious short-fall.

- Acquiring, training, and retaining the necessary staff personnel expertise to meet future requirements.

- Adequate funding to satisfy requirements up front instead of playing catch-up.

- Clearance procedures for contractor personnel. These must be expedited if we are to take advantage of externally produced software.

- Outbuilding computer support requirements. Increased use of outbuildings will inevitably compound our TEMPEST, communications, availability and support problems, particularly the need for additional personnel.

- Security. The growth in the number of users, networking and sensitivity of data being processed will intensify concern for systems security.

III. ISSUES

There are two predominant, relatively specific issues raised in these planning papers: support to the DI and Office Automation. In addition there are many less specific requirements, some of which are implied, which will impact the ODP level-of-effort over the next ten years. For the most part, these are not new requirements. Only the magnitude and urgency will change. An important gap in the plan which must be addressed is the unknown requirements which will be levied on ODP by other DDA components in their efforts to respond to the significant increase in workload implied in the Phase III planning papers.

Support to the Directorate of Intelligence

Project SAFE is the backbone for ADP support for analysts in the DI. Existing plans call for SAFE to support [redacted] analysts. The SAFE design concept has been designed and funded around this figure. The addition of more analysts requested in this plan will cause a significant increase in the SAFE workload and terminal requirements. A study will be required to analyze the impact and to determine the feasibility and cost of the needed SAFE system enhancements. 25X1

Office Automation

ODP has competitively selected a contractor, Wang Laboratories, for an agency-wide standard WP and Office Automation Systems.

The contract includes Wang support for initial surveys, maintenance and training. It is anticipated that with sufficient component funds this effort could be expanded to whatever level is necessary for additional Agency analysts, technicians and clerical personnel.

Additional Requirements

- The "single terminal" concept. ODP will continue to develop and expand hardware and software systems which will enable users to access any needed central service with just one terminal.

- Applications development. The Agency plan implies that a significant additional effort will be needed in the area of specialized data base development. ODP is now about two or three years behind in this support area.

- Support to end user programming. It is clear that ODP will never have enough personnel to address all requirements for new applications development. We must provide enough assistance to the users to permit them to satisfy the more simple programming tasks. The establishment of the Information Center is a step in that direction.

- Support to enhanced modeling activities. Sophisticated models are most efficiently run on a computer designed to optimize processing oriented toward scientific and engineering problems rather than the general purpose computers employed by ODP. If requirements can be found for a dramatic increase in modeling activity. ODP will be required to develop a new scientific computing capability. The hardware alone will cost between ten million and twenty million dollars and there will be a requirement for thirty-five new ODP staff positions to support the activity.

- Graphics capability. The Agency has only begun to exploit the analytical assistance that computer graphics can provide. ODP is sadly lacking in resources to support the development of graphics capability. ODP needs an immediate addition of eight staff personnel for this requirement, with support ultimately growing to a staff level of approximately 15.

- Training. Although OT&E has assumed responsibility for formal classroom instruction for central computer service users, ODP will remain involved in providing users with a variety of computer tools. The Information Center will provide a focus for this activity.

- Automated publication facility. As more and more of the Agency's information holdings are converted to electronic form, there will be increasing demand to go straight to publication in that form. More electronic paths to more ETECS-like capabilities will be required.

- Archiving for storage and backup. A requirement for reliably storing huge volumes of electronic data has existed for some time. But technology has not yet quite evolved to the point to permit serious planning to satisfy that requirement. We will continue to monitor technological developments in this area.

- Improved security techniques. Systems security will always be of great concern. ODP will continue to work with ISSG to identify and resolve security vulnerabilities.

- Improved availability and reliability. Central service customers would like to have their terminals work just like their telephones do in terms of availability. That is, telephone availability is perceived to be nearly 100 per cent. ODP systems availability (which the users see through their terminal) is only 97 per cent, so there is a three per cent margin for improvement. But that three per cent improvement (nearly three per cent--we cannot reach 100 per cent) will require improved hardware technology, redundant equipment, improved telecommunications, reduced software errors, and reduced procedural errors. ODP will improve systems availability, but progress will be difficult and slow.

Absent

No mention is made of personal computers (PC). ODP is in a position to address the issue of TEMPEST PC's networked to the central facility, should the requirement surface, in two ways: Use of the Delta Data with a floppy disk, or use of the Wang Alliance System which has the ability to support the operating system CP/M.

IV. Resources

Resources over and above current planning estimates for FY 1984 - 92 are: In priority order:

- Resources for upgrading the currently planned SAFE facility to support [redacted] 25X1

- Resources for general purpose computing to accommodate [redacted] 25X1

- Resources to plan and man remote facilities to support the above personnel outside the Headquarters building.

- Additional training resources

We would refer to the supplemental support package compiled for 1984 for more specific costing. This report delineates the various ODP resources needed for each incremental increase in analyst and scientist manpower.

1 November 1982

ODP PLAN

ADP Equipment/Services 1982-1992

I. SAFE ENVIRONMENT

The SAFE capabilities plan has undergone a significant change since an external audit was performed in early calendar 1982. As a result of this audit an entirely new approach to SAFE has been developed. The most significant features of the new approach are:

- Use of IBM compatible hardware.
- Use of existing software where possible.
- An incremental development approach to reduce risk.
- Establishment of an early capability using the INTERIM SAFE system that has been used as test-bed.

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While many areas are still under development and review preliminary plans and milestones are as follows:

FY 1983 - Early Capability

- Expand the Interim SAFE capability.
- Use existing software.
- Provide message dissimination.
- Routing capability.
- Private Index Files.
- Save Files.
- Expand the number of users to [redacted] being concurrent users.

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- Provide DIA Testbed.

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FY 1984 Integration

- Text Processing.
- On-line Text Search.
- Introduce SAFE User Language (SUL).
- Expand the number of users to [redacted] being concurrent users. 25X1

FY 1985 Enhancements

- Mail analysis.
- Integrated user interface.
- Inverted Index Search.
- Inverted Text Search.
- Conversion of Interim SAFE.

FY 1986 Enhancements

- Combined Index/Text File Search.
- Full SAFE User Language (SUL).
- Expand the number of users to [redacted] being concurrent users. 25X1

FY 1987 Enhancements

- Full SAFE capability.

II. Backup Computer Center

[redacted] 25X1

Opportunities to extend these backup procedures are on the horizon. For example, one result of the redirection of the SAFE project was a shift to the use of IBM compatible architecture, which will make the SAFE computer center compatible with the existing centers and thus add another dimension of flexibility to backup procedures.

The construction of the new building in the Headquarters compound will likewise provide additional opportunity to extend flexibility. As central computing capabilities are moved from existing computer centers to the new building, some existing computer center space will be retained, refurbished, and used to accommodate some production processing requirements. The systems which will be configured to provide this support will also be included in emergency backup procedures. A request for two staff personnel to manage the move, determine levels of capability to be retained in existing centers, and determine critical backup needs and thus backup system configurations was included in the FY 84 budget submission for the new building.

While the increase in numbers of different computer centers offers additional flexibility in shuttling production workload from one center to another in the event of crippling disaster to a center, more centers mean more work and are indicative of greater dependence on data processing in the Agency. Such dependence begs for more than minimal capability to support critical requirements. Plans should be adopted to establish a backup computer center located away from the Headquarters compound. This implies that a telecommunication capability must be installed such that existing terminals and remote input/output equipment can be switched to the backup center as needed during an emergency. The center must be configured with enough flexibility to accommodate any of the major services supported by ODP. These services include online interactive service (VM), batch processing (MVS), and data base management capability (GIMS) and any of the production systems which they in turn support (e.g., SAFE, STAR, Payroll, etc). [redacted] 25X1
[redacted] feet of computer grade space will be required. A more 25X1
definitive statement of requirements remains to be developed. The personnel who fill the two positions requested in support of the new building will begin the development of such a statement.

III. Strategy for Responding to Significant Increase in ADP Requirements

ODP's long range strategy for supporting quantum increases in demand for ADP services will be to employ the latest advances in microelectronics technology. This will ensure that the central computer utility has adequate computational and storage capacity. Our recently installed IBM 3081 mainframe computers and 3380 disk drives are good examples of the most modern equipment available. Further, we will continue our investigation of the new class of super fast computers (over 100 MIPS (millions

of instructions per second) speed) for possible use in solving the complex scientific problems facing the Agency in this timeframe. Lastly, as the cost of computation continues its remarkable decline, we anticipate moving more functionality out from the control utility to the workplace of the analysis. Our standard terminal will become "smarter and smarter" as we harness the power of the microprocessor. Timeliness and responsiveness will thus be guaranteed by placing the computational power and data in the optimum location for serving the analyst.